IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings of claims in the application. Changes to the claims are shown with additions double underlined and deletions in ~~strikeout~~. No new matter has been added.

Claims 1-133 (Cancelled)

Claim 134 (Currently Amended) A method, comprising:

receiving data associated with a displayed location of a cursor within a graphical user interface, the graphical user interface being associated with a target, the displayed location of the cursor being associated with motion of a manipulandum;

generating a first force feedback when the cursor is moved from a position outside a boundary of the target to a position inside the boundary of the target; and

generating a second force feedback, the second force feedback being one of a vibrational force feedback and a texture force feedback, the first force feedback being the other of the vibrational force feedback and the texture force feedback, ~~different type of force feedback than the first force feedback,~~ the generating the second force feedback occurring when the cursor is moved from a position inside the boundary of the target to a position outside the boundary of the target.

Claim 135 (Previously Presented) The method of claim 134, further comprising:

generating a third force feedback, the third force feedback being a different type from the first force feedback and the second force feedback, the generating the third force feedback being based on movement of the cursor within the boundary of the target.

Claim 136 (Previously Presented) The method of claim 134, wherein the first force feedback is an attractive force feedback.

Claim 137 (Previously Presented) The method of claim 136, wherein the second force feedback is a barrier force feedback.

Claim 138 (Previously Presented) The method of claim 134, wherein the first force feedback and the second force feedback have different magnitudes.

Claim 139 (Previously Presented) The method of claim 135, wherein the third force feedback is one of a vibrational force feedback and a texture force feedback.

Claim 140 (Previously Presented) The method of claim 134, wherein the first force feedback is an attractive force feedback, the second force feedback is a barrier force feedback, the first force feedback having a different magnitude than the second force feedback.

Claim 141 (Previously Presented) The method of claim 137, wherein the target is a menu item in a pull-down menu.

Claim 142 (Previously Presented) The method of claim 134, further comprising:

maintaining a history of the position of the cursor; and

determining whether the cursor is moving into or out of the target based on the history of the position of the cursor.

Claim 143 (Previously Presented) The method of claim 134, further comprising:

determining if a signal associated with a selection of the target has been received; and

preventing the generating of the second force feedback if the target has been selected.

Claim 144 (Previously Presented) The method of claim 134, further comprising:

determining if a signal associated with a selection of the target has been received; and

preventing the generating of a third force feedback if the target has been selected while the cursor remains within the boundary of the target.

Claim 145 (Previously Presented) A method, comprising:

receiving an indication of a simulated interaction between a cursor and at least one graphical object displayed in a graphical user interface, the graphical user interface being displayed by a computer;

determining a simulated collision force to be output by an actuator coupled to an interface device, the simulated collision force being based on a force feedback associated with the simulated interaction of the cursor with the at least one graphical object;

scaling a magnitude of the simulated collision force, the scaling being based on a velocity of the cursor in the graphical user interface, the scaling being performed after the simulated collision force is determined; and

outputting the scaled magnitude of the simulated collision force to the interface device.

Claim 146 (Previously Presented) The method of claim 145, wherein the scaling of the magnitude is further based on a simulated mass of the at least one graphical object.

Claim 147 (Previously Presented) The method of claim 145, wherein the at least one graphical object includes a plurality of graphical objects of different types, wherein the determining the simulated collision force is based on the force feedback is associated with all graphical objects of a particular type.

Claim 148 (Previously Presented) The method of claim 145, wherein the graphical user interface is configured to display graphical objects each being a type from a plurality of types, the plurality of types including at least two of icons, windows, and item menus.

Claims 149 (Currently Amended) A method, comprising:

defining at least one graphical object located within a graphical user interface as one of a solid object and a pass-though object;

associating the at least one graphical object defined as a solid object with a force feedback, the force feedback including sensation parameters, the sensation parameters including a duration parameter, a magnitude parameter, and a frequency parameter;

receiving data associated with a displayed location of a cursor within the graphical user interface, the at least one graphical object being associated with a target, the displayed location of the cursor being based on motion of a manipulandum; and

outputting the force feedback associated with the graphical object defined as the solid object when the cursor interacts with the graphical object, whereby the force feedback is output when the cursor interacts with the solid object, and whereby no force feedback is output when the cursor interacts with pass-through objects.

Claim 150 (Previously Presented) The method of claim 149, wherein the force feedback is a vibration.

Claim 151 (Cancelled).

Claim 152 (Previously Presented) The method of claim 149, wherein the force feedback is a texture sensation.

Claim 153 (Previously Presented) The method of claim 149, wherein the graphical object is an icon.

Claim 154 (Previously Presented) The method of claim 149, wherein the graphical object is a menu item.

Claim 155 (Previously Presented) The method of claim 149, wherein the graphical object is a hyperlink on a web-page.

Claim 156 (Previously Presented) The method of claim 149, wherein the force feedback is associated with a high-level command including the sensation parameters.

Claim 157 (Currently Amended) A method, comprising:

associating a first type of graphical object with a first force feedback, the first force feedback being one of a vibrational force feedback and a texture force feedback, the first type of graphical object being associated with a first interface function;

associating a second type of graphical object with a second force feedback, the second force feedback being the other of the vibrational force feedback and the texture force feedback ~~different from the first force feedback~~, the second type of graphical object being associated with a second interface function, the first force feedback and the second force feedback having a sensation parameter, the sensation parameter including a duration parameter;

receiving data associated with a displayed location of a cursor within a graphical user interface, the graphical user interface having a graphical object, the displayed location of the cursor being based on motion of a manipulandum;

determining if the graphical object is of the first type of graphical object or the second type of graphical object based on the data associated with the displayed location of the cursor; and

generating one of the first force feedback and the second force feedback based on the determining.

Claim 158 (Previously Presented) The method of claim 157, the first force feedback having sensation parameters, the sensation parameters including a duration parameter, the method further comprising:

limiting the time duration of an execution of the first force feedback based on the duration parameter.

Claim 159 (Previously Presented) The method of claim 157, the generating one of the first force feedback and the second force feedback further comprising:

generating one of the first force feedback having a first magnitude and the second force feedback having a second magnitude, the first magnitude being different than the second magnitude.

Claims 160-161 (Cancelled).

Claim 162 (Previously Presented) The method of claim 157, wherein the first type of graphical object is an icon and the second type of graphical object is a menu item.

Claim 163 (Previously Presented) The method of claim 157, wherein the first type of graphical object is a menu heading and the second type of graphical object is a menu item.

Claim 164 (Previously Presented) The method of claim 157, wherein the first type of graphical object is a hyperlink on a webpage.

Claim 165 (Previously Presented) The method of claim 157, further comprising:

receiving a signal associated with one of the first force feedback and the second force feedback at a microprocessor local to the manipulandum, the signal including a high-level command;

executing a local routine corresponding to the high-level command; and

generating one of the first force feedback and the second force feedback based on the local routine.

Claim 166 (Previously Presented) A method, comprising:

creating a mapping that associates each of a plurality of types of graphical objects with at least one of a plurality of types of force feedback, each type of force feedback including sensation parameters, the sensation parameters having at least a magnitude parameter, a duration parameter, and a frequency parameter;

receiving data associated with a displayed location of a cursor within a graphical user interface, the displayed location of the cursor being based on motion of a manipulandum;

determining when a cursor has entered a boundary region of one of the plurality of graphical objects, the determining being based on the mapping; and

generating a force feedback when the data associated with the displayed location of the cursor is located within a boundary region of at least one graphical object from the plurality of graphical objects, the generating being based on the mapping.

Claim 167 (Previously Presented) The method of claim 166, wherein the plurality of types of graphical objects includes at least one icon, menu, and window.

Claim 168 (Previously Presented) The method of claim 166, wherein the generating further includes:

generating a signal configured to be received by an interface device, the interface device including the manipulandum, the signal including a high-level host command having at least one of the sensation parameters.

Claim 169 (Cancelled).

Claim 170 (Previously Presented) The method of claim 166, wherein the generating the force feedback further includes:

determining a value of the magnitude parameter for the force feedback based on the velocity of the cursor.

Claim 171 (Previously Presented) The method of claim 166, wherein the selected force feedback is a jolt sensation.

Claim 172 (Previously Presented) The method of claim 166, wherein the selected force feedback is a vibration sensation.

Claim 173 (Previously Presented) The method of claim 166, wherein the selected force feedback is a texture sensation.

Claim 174 (Previously Presented) The method of claim 166, further comprising:

receiving a signal associated with the selected force feedback at a microprocessor local to the manipulandum, the signal including a high-level command;

executing a local routine corresponding to the high-level command;

generating one of the first force feedback and the second force feedback based on the local routine.

Claim 175 (Previously Presented) A method, comprising:

determining if a graphical element in a graphical menu is associated with a force feedback; and

sending a signal associated with an application of the force feedback, the force feedback being based on one of a position and a movement of a user-manipulatable object configured to update data values associated with a cursor within a graphical environment, the user-manipulatable object configured to cause a simulated interaction between the cursor and the graphical element in the graphical menu, the force feedback being a snapover force output between graphical elements of the graphical menu.

Claim 176 (New) A method, comprising:

receiving data associated with a location of a displayed cursor within a graphical user interface, the graphical user interface being associated with a target, the data associated with the location of the displayed cursor being associated with motion of a manipulandum;

generating a first force feedback when the cursor is moved from a position outside a boundary of the target to a position inside the boundary of the target;

generating a second force feedback when the cursor is moved from a position inside the boundary of the target to a position outside the boundary of the target, the second force feedback being of a different type of force feedback than the first force feedback; and

generating a third force feedback based on movement of the cursor within the boundary of the target, the third force feedback being a different type from the first force feedback and the second force feedback.

Claim 177 (New) A method, comprising:

receiving data associated with a location of a displayed cursor within a graphical user interface, the graphical user interface being associated with a target, the data associated with the location of the displayed cursor being associated with motion of a manipulandum;

generating a first force feedback when the cursor is moved from a position outside a boundary of the target to a position inside the boundary of the target;

generating a second force feedback when the cursor is moved from a position inside the boundary of the target to a position outside the boundary of the target, the second force feedback being of a different type of force feedback than the first force feedback;

determining if a signal associated with a selection of the target has been received; and

generating a third force feedback when the cursor is moved from a position inside the boundary of the target to a position outside the boundary of the target after the signal associated with the selection of the target is received, the third force feedback being of a different type of force feedback than the first force feedback and the second force feedback.

Claim 178 (New) A method, comprising:

receiving data associated with a location of a displayed cursor within a graphical user interface, the graphical user interface being associated with a target, the data associated with the location of the displayed cursor being associated with motion of a manipulandum;

generating a first force feedback when the cursor is moved from a position outside a boundary of the target to a position inside the boundary of the target;

generating a second force feedback when the cursor is moved from a position inside the boundary of the target to a position outside the boundary of the target, the second force feedback being of a different type of force feedback than the first force feedback;

determining if a signal associated with a selection of the target has been received; and

discontinuing the generating of the second force feedback when the target has been selected.